Tree Care During Home Construction

Cost of building sites with trees *is* higher than sites without trees.

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IF YOU BURN all of your forests, there are no forests left to manage. That was a philosophy of former State Forester George 0. White, He determined that the first order of business for the state forestry agency was to put a stop to the regular burning of the Missouri forests. Now, about 35 years later, the number and size of forest fires have been greatly reduced, and we are more involved with the work of forest management because there are trees to manage.

That same philosophy can be applied to trees in our urban areas: If we cut all of our city trees, there are no trees left to care for.

The urban areas are extending beyond the city limits into the country, into the natural environment, into the open space and into the forests. Homesites are selected to take advantage of existing trees that provide landscaping, shade, screening, wildlife food and cover, cooling and pleasurable viewing.

Building sites with trees often cost as much as $2,000 more than comparable lots without trees. People decide to keep the trees, but the builders don't always cooperate. The result? Construction is finished, the builder is gone, and in three or four years an arborist is hired to cut down the dead trees. Since the trees were not preserved, that part of the natural environment is lost.

The urban growth is going to continue to spread to the forested areas, but that doesn't mean that we must continue to lose our natural environment of trees. If the trees are to be preserved, the homeowner, the architect, the builder, the commercial arborists and the urban

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forester must all work together throughout the construction process.

Prior to any construction, the existing conditions in a forested area must be understood by everyone involved. First, the trees are growing in competition with other trees-competing for sunlight, moisture, minerals and space. Second, the trees protect other trees-through shading, by reducing winds and by slowing soil erosion from the root zones. And finally, the trees maintain themselves through the deposit of leaves and twigs that eventually builds up the soil in mineral content, texture and porosity. The construction of a house can have drastic, long-range, often fatal effects on the natural tree environment.

The trees in areas of new construction are just as susceptible to injury as any other tree in a city or a forest. Trees can be damaged at the roots, at the trunks and in the branches. Damage at any of these points will affect the whole tree and protection of these points will increase a tree's chances for survival.

The best time to start the preservation of the natural tree environment is before any work is started. An on-site inspection by everyone involved is necessary to ensure that the homeowners, the ones paying the bills, are going to get what they pay for. The actual location of the house might be moved and adjusted with regard to the existing trees. It would be nice if the house could be located where all of the dead and dying trees are located, but more often than not, some good trees will have to be removed. As early as possible, the good, desirable trees, should be selected for preservation; the other trees can then be removed.

Once that is determined, the homeowners will need more details on the selected trees. They will need to know the present and future value of the trees and, based on that, can determine how much they can afford to spend on tree preservation. They will need to know what kind of protection the trees will need and how that might affect the construction process. Most homeowners will want to keep as many trees as possible, and an arborist can help in deciding which trees are actually worth the time, trouble, cost and benefit. From that point, with the homeowner's approval, the work begins-the house work in conjunction with the tree work.

Now, the unwanted trees can be removed, Most of these can be removed by a 'dozer, but the commercial arborists should be responsible for removing those trees adjacent to the trees to be kept. Their knowledge and experience will help to prevent serious damage to the trees, and they can do it better than the man operating the 'dozer.

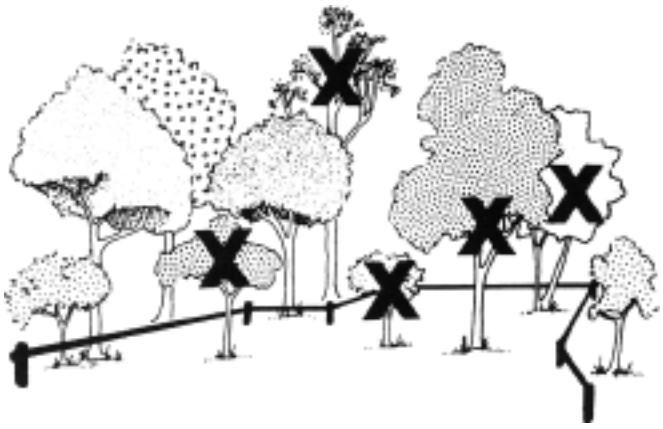
As early as possible, a physical barrier should be established around the trees that are to be preserved. The barriers will establish the no-violation zone, and that should be a minimum of 20 feet from the trunk. A permanent barrier of wood, wire, posts or a combination of these materials, should be placed around each tree or around each group of trees. This barrier will protect the roots, trunk and possibly the top from damage.

Everyone must understand that the no-violation zone must be honored. The area must not be used for storage of lumber, bricks or concrete. It must not be used for parking the construction trailer. And it must not be used for travel by trucks or other heavy equipment. Access by trucks can be provided along the route of the proposed driveway, with perhaps an additional route from the opposite direction. Except in rare cases, trucks should never be allowed random access close to trees.

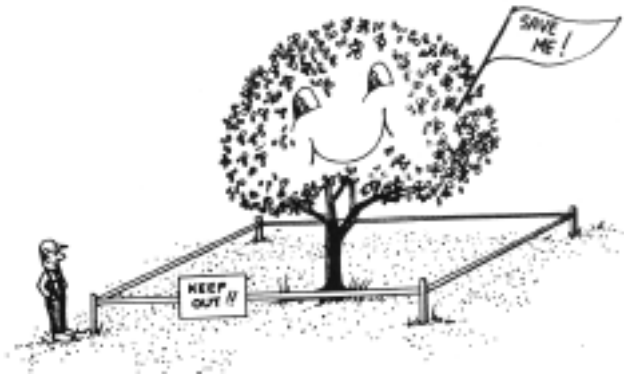
Here, the most important consideration is soil compaction. Trucks and stored materials can compact the upper soil layers. That will close the air spaces in the soil that are vital in allowing air and moisture to get to the roots. Without air and moisture, roots will die, and that will affect the growth in the tree top by, causing dieback of the branches. Once the process of dying roots and branches begins, it is difficult to stop.

There could be a need to cross a no-violation zone to provide for utilities, such as water, gas, electric and sewer. Although utilities are required for the house, care for the trees doesn't have to be forgotten. A trench alongside a tree trunk might be relatively easy to install, yet it will also cut and damage up to 40 percent of the root system of the tree.

A more difficult process is tunneling directly under the tree trunk, but it is by far a better choice for the tree. The root damage can be reduced to near 15 percent if you tunnel under the trunk. Keep in mind that trench locations must be decided early; once the tree loses 40 percent of the roots, they can't be glued back on, and the tree has lost the support and growth of almost half its root system.



Select "leave" trees, and **remove others (marked with an X) as early as possible before construction starts.**



Establish a physical barrier around the "leave" trees to eliminate soil compaction and tree damage.

For valuable or important trees, the utility line might be made with curves or corners to allow for going under, rather than around, the trees.

A barrier setting up a no-violation zone will also protect the tree trunk. Too often, 'dozers and trucks rub against a tree trunk and tear off patches of bark. The drivers don't see that as a problem. Without the protection of the bark, the cambium layer and the wood are exposed and thus are more easily attacked by insects and infected by diseases. Those pests are fully capable of getting into the trees on their own. They don't need any help.

In cases when the bark is ripped and torn from the trunk, quick maintenance is necessary. The jagged edges of the bark need to be cut back to a smooth, even edge. The openings will have to be trimmed and formed to an oval shape, which will allow for maximum growth of callous tissue across the wound to re-establish a protective layer of bark. It is not necessary to apply paint to the wound.

During construction, tree roots and branches will be broken and cut and often left with jagged, irregular ends. The larger roots and branches will heal better if they are trimmed and left with a smooth cut. Treatment of the roots will have to be done after the excavation, of course, and prior to the backfilling. This allows a little leeway in time, but often is a forgotten part of the tree care during construction. Trimming the branches can be delayed some, because they are more easily accessible. Just remember to trim them.

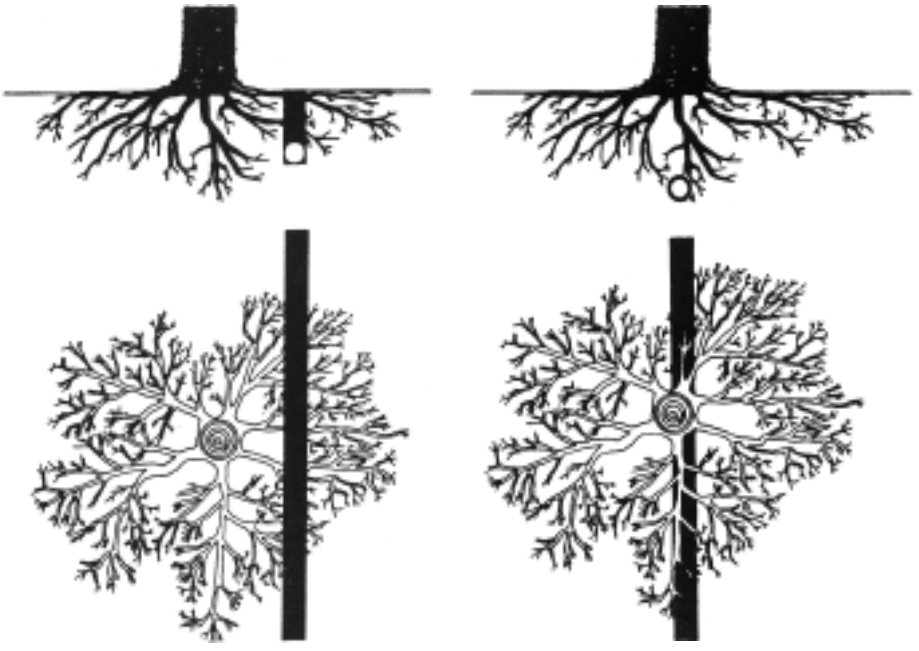
One of the biggest problems in trying to protect trees during construction is the common practice of adding soil fill around trees. Soil filling around trees is said to be necessary to avoid charges of hauling the excavated soil from the construction site. Dozer operators and contractors seem to take pride in their ability to spread the soil to an even and neat-appearing grade. And after their smiles fade away and they are long gone, the homeowner is left with trees that could die within three years.

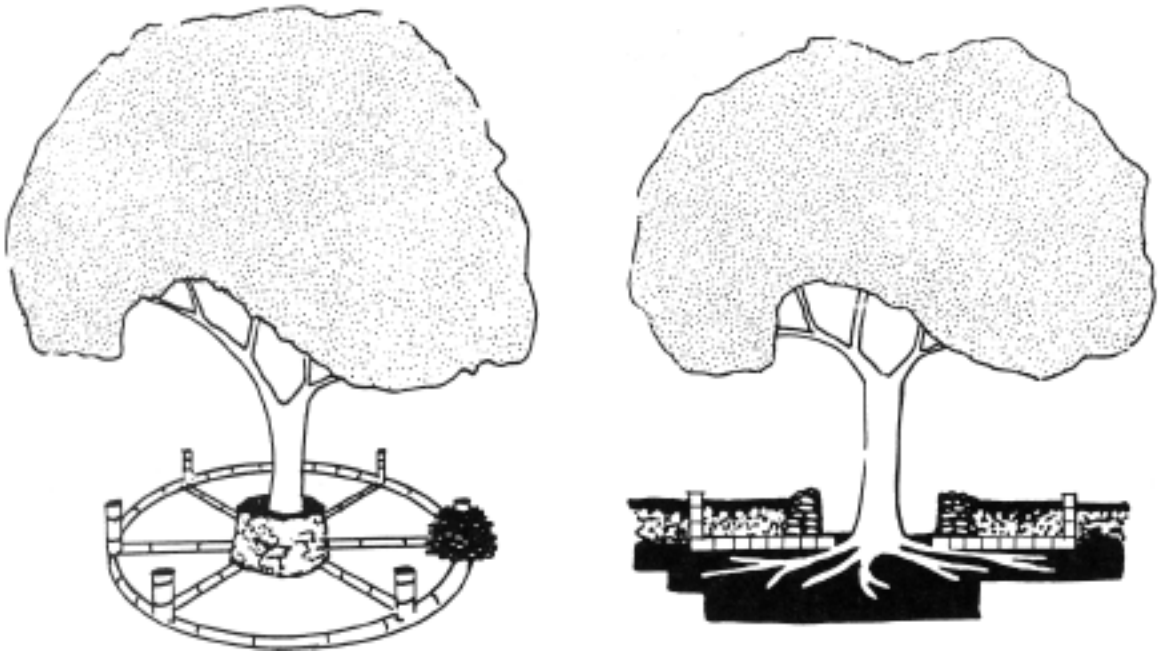
Soil filling around trees causes compaction of the existing soil, with the same results previously stated. In addition to compaction, the raised surface elevation puts the tree roots farther away from available soil moisture. The compaction closes the air spaces, the elevation removes the moisture supply, and the roots are either starved, suffocated or both. Again, dying roots causes dying branches and, eventually, dying trees. The damage can be caused by as little as six inches of fill, and yet a filling of six or eight feet is not uncommon.

If possible, a change in grade should be avoided, but if it must occur, the homeowner can still help the trees. Prior to the soil filling, a tile drainage system should be laid out around the tree or trees like the spokes of a wagon wheel. The tile are put on the surface of the existing soil, and these are stabilized and covered by a layer

Underground utility lines that go along the side of a tree result in cutting and loss of up to 40 percent of the tree roots.

Tunneling directly under the trees helps to preserve the trees, even though it is more difficult and costly.





Prior to soil filling around a tree, install drain tile *and coarse* rock to provide aeration and reduce compaction.

of coarse rock. The ends of the tile lines should be about two-thirds the distance from the tree trunk to the drip line of the branches. Elbows or corners are installed, and the tile is extended upward or vertically to the height of the new soil level.

With that complete, the filling can be added. A rock or brick wall will have to be installed around the tree trunk, and this must tie in to the horizontal tile lines. The well around the trunk, plus the vertical tiles, will allow moisture and air to pass down to the root zone of the trees, The coarse rock layer will reduce some of the effect of compaction. Then, some of the branches should be cut or thinned to reduce the demand on the roots for moisture and minerals. With proper installation, followed by watering and fertilizing, the trees will have a better chance for survival.

Another area of concern when trying to preserve the natural tree environment is the final slope and drainage patterns when the construction is complete. Rainwater from rooftops, driveways and yards usually moves away from the buildings. But the rainwater should also move away from the trees. Trees can survive saturated soil for a few days, but prolonged wet conditions of several weeks reduces available oxygen needed by the roots. Also, chemicals such as herbicides and gasoline and salt can be carried and deposited by rainwater. When the deposits are left in the root zones of the trees, the trees are going to suffer.

Suggestions for the homeowner:

-Seek advice on trees from commercial arborists, landscape consultants, municipal and urban foresters, nurserymen and planners.

-Demand cooperation between the tree people and the construction people.

-Put time and money into trees through protection and tree maintenance.

-Provide for tree care before and after construction.

The overriding purpose of all these tree care activities is to keep the largest possible number of existing trees without stopping the growth of the urban areas. The trees that are 25, 50, 150 years old are way ahead of those we plant. By giving these old trees a lot of tender loving care, homeowners and communities will receive the benefits of those trees for many years. This is a one-by-one, tree-by-tree, acre-by-acre task, but in total it goes a long way in maintaining a natural environment of trees in our urban areas.